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ABSTRACT

A course for first-year architectural students is described. The approach concentrated on developing an understanding of the nature of design activity through exploration of the kind of thinking that may be applied in order to improve the first-year studio work. The course is based on the following premises: (1) it is possible and educationally desirable to separate a thinking process from any product that results from that process; and (2) beginning students bring with them knowledge and experience from their everyday life that provide a useful starting point for investigation of the activity of design, and it is desirable to proceed from this starting point. Studio work consistently differentiated between work relating to learning about the nature of design (process) and work where the end product of the process was the main concern. The pattern of work was: a project in which an intuitive approach towards satisfying certain design conditions was indicated; a series of projects aimed at exploring particular aspects of the process now shown to be a natural way of proceeding towards some desired future state and relating this to architectural needs; and an exercise designed to reach a satisfactory architectural expression meeting the conditions set. Projects included accommodation for architecture library in an existing space, accommodation for medical general practitioners, and an exhibition stand for solar energy hot water units. Implications of the approach for professional education are considered. (SW)

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Studio Design Work in First Year Architectural Education

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Studio Design Work in First Year Architectural Education

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PREFACE

On the 5th January, Philip George Brian Claridge passed away. At that time he was deeply involved in the development of a course in design for first year Architecture students and had just completed the draft of a paper to be presented at an international conference. That paper is reproduced here (with slight editorial alteration) as a permanent record of his last contribution to architectural education.

First year university courses are routinely criticised for their low pass rates, large classes and impersonal treatment of students. The most recent of these criticisms was made in the Report of the Committee of Inquiry into Education and Training (the Williams Report) to the Commonwealth Government in February, 1979:

> The universities have improved their arrangements and first-year pass rates are now considerably higher than in 1951. But there is room for further improvement. The distribution of teaching load between years and departments is better than it was though not yet ideal, and insufficient attention is given to the provision of small group teaching tutorials and oral appraisals of essays and examinations in first year. Staffing is such that it is not necessary for universities to seem impersonal. To far too many first year students the university is a somewhat cold and impersonal place by comparison with school.

In the light of these comments, it is refreshing to learn of approaches to first year teaching which address themselves to these kinds of problems. The work of the late Brian Claridge in the Department of Architecture is an example of such an approach.

Perhaps the best way to introduce his work is to quote from the last paragraph of his paper. This quotation encapsulates the thinking behind the development of this new course in design and illustrates the genuine concern of Brian Claridge for his first year students.

> For a first year course it is often argued that, at the most, only very little exists upon which to build. This is particularly so in courses where the school experience does little to prepare students either in subject matter or way of thinking required in a university setting. Professional courses usually fall into this category. But this argument overlooks the fact that students bring with them more than just academic

experience. They have already acquired a way of perceiving and coping with things in their everyday life. To neglect this means that new knowledge is being presented in a way that students are unable to relate it to any past experience. As a result, unnecessary complications are introduced into a first year course. We have tried, in a small way perhaps, to reduce these complications.

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STUDIO DESIGN WORK IN FIRST YEAR ARCHITECTURAL EDUCATION

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Introduction

There are many ways in which design work in the studios may be approached and, in particular, how the special needs of first year students may be met. Of course, there are teachers in architecture who are conscientiously trying to make first year design work an educationally sound experience of significance to students. This paper describes one such approach which has concentrated on developing an understanding of the nature of design activity through exploration of the kind of thinking that may be applied. The emphasis is not at all on the end-product as such, but rather on the thinking process adopted to reach an end-product. The approach is process-directed rather than product-directed. There is nothing really revolutionary in this, but it is evident that many teachers in architecture find it very difficult to accept that process and product can and should be completely separated in this way (1). Architects are, by nature of their work, very concerned with products, and many teachers in architecture schools are architects by training, if not still practising. As a result, teaching of design in architecture schools has attached great importance to the products of design, particularly in studio work.

The course was introduced because it was felt that first year students were being expected to launch into architectural design without being given sufficient help to understand the nature of the design activities involved. Because studio work in schools of architecture is so well established, the basis on which it proceeds has become uncritically accepted. The time seemed ripe for questioning the widely held assumptions upon which approaches to studio work could be said to rest.

There were some opportunities in past years to make moves towards overcoming some of the inadequacies of first year studio work. These were

tentative moves towards the far more developed approach described here. The first chance of a real enquiry into studio methods came with a study leave period (1976/77) when investigation of first year teaching was the main concern. During this year in Britain and Europe, the principles upon which the 1978 studio programme was based were established. These principles were discussed with people prominent in enquiry into architectural education in particular, and in education generally. The response of these people provided the encouragement to bring the ideas to the point where they could be put into practice.

Some assumptions in teaching architectural design

As in many schools of architecture, teaching in the Department of Architecture at the University of Adelaide has relied on design work done in the studios as the principle way to develop and evaluate students' competence to make design proposals meeting specific sets of requirements. This work has traditionally been regarded as requiring students to draw on a large body of knowledge built up in all the other components of the course, to select from this the information relevant to each particular design task, and to seek out additional information appropriate to particular needs. The body of knowledge students are expected to draw from is very wide, ranging from factual matters to conceptual ones, from being scientifically and practically based to less tangible matters. Design competence is judged almost exclusively on the final product - the physical proposal as represented, usually, through drawings or models.

Two assumptions underlie the common way of proceeding with studio work. One is that the student knows how to manipulate all the information acquired in a wide variety of subjects elsewhere in the course. The notion of 'synthesis' is glibly referred to as if it were some 'magical' power automatically present in every student. There is practically no understanding of the enormous demand that proceeding on this assumption makes on students; students are penalised when this 'magic' is not apparent in their work. In the first year, especially, this is a most questionable way of teaching.

The other assumption is that process cannot properly be separated from product; that, because architecture is so much concerned with product, then product is what should be evaluated. If there is any expressed concern for process, then it is usually held that process and product can be evaluated through the one piece of work. This assumption, as well as leading to confusion over just what is being assessed, overlooks that a student might have learnt a great deal and even achieved stated educational aims, but still has had the end-product judged unfavourably. Emphasis on product, in such circumstances, greatly diminishes what could have been a significant educational outcome.

Another characteristic of many architecture courses is that any experience and knowledge students bring with them (and this does not just mean only in a purely academic sense, but more importantly in the sense of what their living experience has developed) is not used as a starting point - we expect a very rapid conversion to the architectural way of thinking and doing, and rather see past experience and knowledge more of a handicap than a useful starting point. As a result, new knowledge is given without the student having anything to relate it to. This is contrary to natural learning tendencies. From very early in life, new knowledge and experience is related to what we already know, and in this way the new is put into some context and consequently has some meaning for us. Architectural education - and possibly education in other disciplines - as a rule does not pay much attention to this principle of learning.

The basis of the course: the architectural design process

The first year course described here questions the assumptions noted, and respects the knowledge and experience students bring with them. The course is based on two premises, which have been argued for elsewhere (2):

1. it is possible and educationally desirable to separate a thinking process from any product that results from that process;
2. beginning students bring with them knowledge and experience from their everyday life that provide a useful starting point for investigation of the activity of design, and it is desirable to proceed from this starting point.

The first premise leads to the notion that if product is to be at any time the subject of scrutiny for assessment, it is best for this to be done through a separate piece of work, with such a purpose explicitly stated.

What, then, is the 'thinking process' we have investigated in the first year studio programme of work? In essence, design has been presented as an activity depending on the use of information as a means to bring about some desired future state. This will be referred to simply as 'information processing'. This was done because it is possibly one way we could respect the second premise - to start from and to build upon the knowledge and experience students have gained from their everyday life and to develop new experience and concepts out of what exists. This was not entirely left to the studio programme of work. A lecture course (Architectural Design and Planning 1) was used to explore the concept of design as information processing. The studio work was closely related to this lecture course and provided the opportunity to put the concept into practice.

In the lecture course we initially discussed how everyday life choices are made between one possibility for action and another and how the benefits and disadvantages of a possibility for action may be assessed. The process of arranging a familiar event (e.g. a picnic) with a certain preferred outcome was used to illustrate how information and experience is intuitively used to work towards ensuring that the preferred end result comes about. The natural (but perhaps unconscious) way of arriving at a desired future state was then extended to apply to architectural design. (Admittedly, the description of this 'natural way' given here is perhaps idealistic; later comment is made on this - see page

The kind of thinking processes appropriate to architectural design were investigated in such a way that students were able to relate new concepts to something with which they were already familiar. This had the advantage of removing some of the mystique that has come to surround architectural design, and to help students approach design with some measure of confidence. Students were shown that they already were

accustomed to applying the principles involved.

We were not concerned with how the possibilities for action may be generated in the first place. Rather our concern was with two questions: 'Given that different possibilities for action exist, how do we determine which is the most appropriate course of action?' and 'How do we decide whether one particular possibility for action is appropriate or whether we should seek another?' Answers to such questions can be arrived at in the following way - a way held to be a possible model of how one proceeds in everyday life. First, there must be understanding of what the 'desired' outcome is; second, there must be some prediction of the consequences of any action conjectured to lead to the desired state; third, a comparison can be made of what is predicted with what is desired. Simply, it could be supposed that if a possibility for action is seen to advance us towards what is desired, then the action is probably worth pursuing. If the possibility for action is not seen to advance us towards what is desired, then it should probably be abandoned and another possible action investigated.

This simple description makes several assumptions: a set of information exists on which understanding of the desired state is based; a set of information exists which can be used to predict the consequences of an action; these two sets of information are complete and final; priorities amongst the different (and possibly conflicting) elements of information in both sets are fixed; and clear indications of whether the action will or will not lead to the desired state are possible. In architectural design, things are seldom, if ever, as well defined as this, and complexity is introduced once these assumptions are shown to be false. (The simple description seems to point to a mechanical, 'glass box' notion of the designer, and to preclude the possibility of inspired guess, creative leap, and other concepts associated with creativity. This in fact is not so. Accepting, for the moment, that such a simple description of a way to proceed could be quite misleading on its own, it was useful as a basic concept from which the more complex and realistic picture could be developed.

Design regarded as information processing has been presented as requiring:

- selecting information necessary to determine the nature of the desired future state to be achieved;
- selecting information necessary to predict the consequences of any action intended to contribute towards achieving the desired state;
- organising both sets of information in ways that make them readily usable and meaningful to the designer and to others;
- using these organised sets of information to compare what is predicted with what is desired (testing ideas, conjectures);
- recognising that both sets of information may be modified (e.g. according to new insights only revealed by working towards the desired state).

Two characteristics of this approach should be noted. First, the 'nature of the desired future state' is not to be equated with anything physical (e.g. a building). The relevant set of information is regarded as a description of the design conditions to be met. The 'future desired state' is primarily that these conditions should be met, not that something should be produced. If this is kept in mind, the distinction between process and product becomes easier to accept. Any product that results is merely the means to express how the conditions may be met - but the prime aim of the whole exercise is to ensure that they will be met as fully as possible. The conditions to be met fall into two groups: those criteria that all designers should satisfy irrespective of personal inclinations (these include all the usual stipulations of a 'client's brief'); and those which the designer's sensitivity, personal inclinations, values and priorities tell him should also be met. It is the recognition of this second group that largely explains the differences between one designer's proposal and another's.

The second characteristic is that the thinking process is essentially one of testing ideas. The organised sets of information providing the means to do this. Two points referred to earlier are relevant here: that we have not been concerned with how any ideas of what will bring about the desired state are generated in the first place; the suggestion that this

approach to design seems to indicate a 'glass box' procedure that does not accommodate any spark of creativity and individual expression. The fact is that the process described is applicable no matter how ideas have been generated (and, for this reason, it has not been necessary to consider the generation of ideas). This should dispel any misgivings about creativity. However, ideas come about - through a creative leap, intuition, from precedent, or from cold analysis - we have only been concerned that the ideas are tested rigorously to see whether they are likely to lead to meeting the design conditions. The emphasis has been on ensuring a clear understanding of the design conditions to be met and on the testing of ideas against this criterion.

The problem of 'synthesis' was a matter largely for the Architectural Design and Planning 1 lectures, although, as it was discussed, it was not necessarily referred to as such. The purpose of the discussion was to help students, from the outset, to know what information was needed, when it was needed, where they could get it, and how they could use it. Reference must be made to a wide range of knowledge to describe any desired future state particular design work could require. Elements in this range of knowledge relevant to each of the many considerations that need to be made in design work and to the sources of the various elements were identified. The same attention was given to the information necessary for making predictions of the consequences of any action intended to lead to the desired state. It was pointed out that it is not necessary to try to cope with the complete range at the beginning. It is far better to use information progressively, starting with information appropriate at the initial stages of design, gradually introducing more and more particular information as the design work progresses. In this way, 'synthesis' became more than something just left to chance. Students began their design work with some understanding of how to deal with information for design needs.

Organising information for ready use is an important component in the way of thinking about design. This 'organising' may be thought of as the 'analysis' usually required, or assumed to be done, before design work

starts. The purposes of organising information were given as:

- to provide the means whereby varied information can be sorted out so that the relevance of any piece of information to any of the many design considerations can be recognised;
- to provide a means to come to an understanding of the desired future state it is wished to reach, and of the consequences of design actions;
- to encourage students to always have on hand a concise record of their current state of understanding of what they are hoping to achieve, and to have a sure basis on which to predict consequences of design actions so that what is predicted can be compared with what is desired;
- to provide a ready means to incorporate the results of any review of information done in the light of new insights. This can be done more easily with an organised set of information than with an unorganised set;
- to provide a means to present information so that it has meaning for others as well as for the designer, and consequently to provide a useful reference for teaching as well as for practice;
- to provide the means to ensure that the designer is dealing with complete sets of information;
- to provide means to establish the order in which varying degrees of detail or speciality of information should be introduced into design considerations as design work progresses from the general to the more detailed states.

This concept of organising information goes beyond the usual notion of 'analysis' in that it refers to two sets of information: information for determining the desired future state and information to predict consequences of design action. 'Analysis' often refers only to the former. We tended to stress the application of organising information to determining what it would be desirable to achieve. Various graphical means to present information in readily usable ways were introduced to students and their use was encouraged.

This outline of the intentions of the course may leave the impression that a rather ambitious first year programme was attempted. As will be seen,

not everything described so far was successfully tackled and some of it did not receive as much attention as the description implies. But everything we did can be placed somewhere in this framework and we tried to be consistent and faithful to the general philosophy given here. Any shortcomings would be the results of the method used to put this philosophy into practice.

The studio programme of work

Studio work consistently differentiated between work relating to learning about the nature of design (process) and work where the end-product of the process was the main concern. To keep this distinction quite clear, the term 'project' was applied only to work of the first kind; the term 'exercise' was used to refer to work concerned with the end-product. Of the five pieces of work required, only one - the last - was an exercise. We were working to a rather limited time schedule (two terms) which meant we had to adjust what we wished to do to a somewhat restricted programme of work.

Briefly, the pattern of work was: first, a project in which an intuitive approach towards satisfying certain design conditions (i.e. achieving some desired future state) was indicated, the purpose being to provide a starting point derived from the students' own experience and to provide some common ground which could be used as a basis for examining the process intuitively adopted; next, a series of projects aimed at exploring particular aspects of the process now shown to be a natural way of proceeding towards some desired future state and relating this to architectural needs; and last, an exercise in which it was assumed the procedure examined would be followed to reach a satisfactory architectural expression meeting the conditions set (the intention was that students themselves would be placed in a position to judge the adequacy of their product; use of information to this end, which the projects had dealt with, was to be the basis of this judgement).

The series of projects had a degree of flexibility so that the outcome of

one project would be allowed, if necessary, to influence the nature of the following project. This was done so that any educational aim not substantially achieved in a project could be given more attention to ensure a sounder basis for following work. Such an adjustment was clearly necessary once. Also, this series of projects was designed to present progressively more demanding tasks through the number and type of considerations necessary to define the desired future state.

Emphasis on process rather than product meant we had to make considerable adjustments to our habitual way of regarding student submissions. Each submission was followed by review sessions; the interval between submission and review being the least necessary for staff to gain some impression of the submissions made. These sessions were regarded as an essential and integral part of the project and not in the sense of the traditional 'crit'. A project was not thought of as being in any way complete until these sessions had been held. This part of a project was usually introduced in a general discussion with the whole class, after which a number of small group tutorials were held. Tutorials were followed by individual sessions offered to any student with particular problems.

The review sessions conveyed to students that the project was still continuing. We were not simply 'critting' what had been done, but were still probing to help students discover their own level of understanding of design activity, and extending this understanding within the context of each project. We discussed the work in terms of the stated aims of each project and used the review sessions to give opportunities for students to evaluate their own progress towards achieving the aims. The outcomes of these review sessions determined whether any aspect of the project needed further attention in the following project. Because of the time limitation, this flexibility was, in fact, exploited only if a serious shortcoming was apparent.

Even though the end-products of these projects might ordinarily have been judged unsatisfactory, it was clear when adequate progress was being made towards understanding the nature of design activity. The product was used

simply as a means to discuss this understanding. From student comment, it is apparent that the main concern with process was perceived by most students, and that product was seen to be used as a means, not an end. If process is to be the main concern, then it is essential that it is seen to be so. We can claim some success in this.

In addition to this programme of work, three sketch designs were included (of one-half or full day duration) intended to develop three-dimensional visualisation. These were outside the mainstream of the projects/exercise programme, but were seen as complementary to it and required submissions as models.

Project P1

Subjects: various, ten tasks in all

The first project was not for assessment, and served as a basis for all future work. It was also intended to help new students to begin to know each other and to help identify the range of skills, knowledge, and experience students brought with them. The project was organised as group work, and involved tackling novel design conditions (3). It required an intuitive approach; no ready-made solutions were easily available for reference. The aim was to let students experience, without staff intervention, the demands of having to meet specific design conditions. This project particularly illustrated the principle that such an experience can be very useful educationally, even though the end-product may not have been very successful. There were, nevertheless, examples of groups achieving quite successful products.

For our purposes, it was significant that some groups ran into difficulties because they had insufficient understanding of what they were trying to achieve. We were able to show that this resulted from not seeking relevant information in the first place. Not all the groups faced the same difficulties, but the composite experience of all groups covered the essential areas of design activity - at least in the context of the way we wished to pursue it - and enabled us to cover an adequate range of relevant matters.

Anticipating that the main thrust of what was to come would be concerned with information processing, the manner in which students acquired and used information was of particular interest. Staff monitored group activity and noted the intuitive way in which each task was approached. Each group kept a day-to-day diary of their work progress, and these diaries were collected and studied before the review session.

In the review session we attempted to isolate the various steps groups had taken in their intuitive approach to their task. Whatever the task - and there was a wide range - some common pattern of approach could be detected in the diary accounts and from our own observation (4). Through discussion and extension of what had been done intuitively, it was possible to show that this could be analysed into constituent parts. However, it was stressed that such an analysis is merely a tool for examination of design activity and does not produce a strict analogue. In making the analysis, we were trying to tease out the 'parts' in order to understand their contribution to the whole. Information - its sources and use - was approached in this way. The need for information was the first 'part' of design activity isolated and subjected to further study. In this way we were able to move from the experience already possessed by students, and now extended by this project, to new concepts that could easily be related to existing experience. It did not really matter whether the end-products were successful or not. What did matter was that we were able to discuss the essential character of the process involved in reaching an end result, based on what students actually did in carrying out the task set.

To emphasise that we were not assessing the end result, we encouraged students to seek outsiders to comment on the success or otherwise of the actual products. Our only contribution to this was to help students find appropriate people (5). In this way we were able to let students have some idea of the success of their efforts.

In summary, this project enabled students to experience the demands of meeting given design conditions; it provided the opportunity to discuss the various components of the process students had intuitively adopted, and

some justification for singling out specific components for later study in following projects. Most importantly, it enabled us to relate new concepts to existing experience and knowledge, and to build on this so that what was to follow could be seen as a natural extension of what already existed. Because this project was not for formal assessment, students were freed from any feeling that they would be penalised for any inadequacies in their intuitive approach - it prompted a relaxed attitude and helped us to achieve the base for future work we were seeking.

Project P2

Subject: Accommodation for architecture library in an existing space

This project was directed towards helping students build upon the realisation gained from project P1 that before any design activity can be properly undertaken, information relative to the task in hand needs to be available. As mentioned in the account of P1, insufficient initial information was shown to be one cause of finding the design task difficult. Project P2 was primarily concerned with the gathering of relevant information, and then the use of it. The initial information gathering was done in groups, each group responsible for one particular area of information. The students themselves decided what these areas might be, and the collection of information within the categories determined followed. This activity was done with virtually no staff intervention, but we observed and monitored the activity. Having had the deficiency of information pointed out in P1, students over-reacted and collected a large amount of information, some groups overlapping. Some information was shown, subsequently, to be beyond the needs of the programme. All the information collected was displayed in the studio.

Then came the need to apply this information, and to select from it what was relevant to particular needs at particular times. The need to organise the information into a form that made it readily usable was presented to students as a necessary first step. Students were encouraged to sift out information that helped them towards understanding the design task presented, to recognise some hierarchy in the information (i.e. information relevant to general understanding through to information relevant to

more and more detailed understanding), and to organise the information into forms that made it more meaningful for use.

This project was not as successful as it could have been. Early in the project, a variation to the requirements was made to help students avoid unnecessary repetitious work not anticipated when the project was devised. Unfortunately, this variation was seen by students as a hinderance. We were accused of altering things, confusing students, and adding to the work load. Our intention was just the opposite, but this was not seen to be so. This was perhaps a natural reaction from students a little nervous anyway, about what they were asked to do and confronted with a demanding enough task in the first place. To have requirements changed, however early in the proceedings, was not easily accepted. This was a mistake on our part and reduced the effectiveness of the project. In the end, this project was judged by students as the least successful of all the work we did (6).

In spite of the difficulties, some progress was made in this project, but we were not at all satisfied that as much had been gained as we had hoped. Because of this, the purpose of the next project in the series needed to be changed so that we could repair some of the damage and because we had already touched on one aspect originally intended to be reserved exclusively for the following project (the use of information). We achieved something of the aims of the project in that we emphasised the need for information in the first place and demonstrated how it might be organised into a concise form ready for reference when required.

Project P3

Subject: Accommodation for medical general practitioners

This project was designed to make up the deficiencies of the previous one. It required much the same considerations but in a much tighter set of design conditions. Students did not have to collect all the information for themselves, and the project concentrated on the organisation and use of information. As with P2, this project was primarily concerned with

two-dimensional planning, although a first introduction to three-dimensional aspects was made. This was a very successful project in all respects, and was rated very highly by students.

Project P4

Subject: An exhibition stand for solar energy hot water units

The range of information students were obliged to consider was now extended. Much the same approach as had been followed in previous projects was expected, but now some attention was to be given to three-dimensional consequences and to some simple demands in relation to the construction consequences of design action. A deliberate emphasis was now given to the designer's own criteria (to be expressed in user terms as far as possible) as additional to the given design conditions. This requirement had been referred to but not stressed in previous projects. The amount of information students had to find for themselves was minimal. A model of the proposal was required for submission which overcame the lack of drawing skill evident in some students' work so far (7).

This was an instructive project. Discussion by reference to models was superior to discussion by reference to drawings. This was particularly so when it came to considering the use to which information had been put, the degree of consistency between information available and what was actually done, and the appropriateness of aspects of the proposals made.

Exercise E1

Subject: Accommodation for seasonal fruitpickers, near Renmark, S.A.

The programme for this exercise emphasised that now the main concern was with the end result of design activity - the product. It was assumed that the process we had explored through the projects would be applied. This was to be the basis on which students could judge for themselves how satisfactory their proposals would be. It was stated that as well as the adequacy of the proposal, the manner in which proposals were presented would now play a part in the assessment for the first time.

It must be admitted that the outcome of this exercise, taking an overview of the results of the whole class, was not much different from outcomes of similar programmes in past first years. There was the usual range of proposals, from very good to very poor. Some students managed to make satisfactory proposals strictly within the design conditions stated. Others glossed over given conditions when these conflicted with what they wanted to do. Some interpreted the given conditions in very dubious ways in an effort to resolve such conflicts. But we are not pessimistic about this particular outcome.

As a preliminary part of this exercise, students were required to schedule their time for the whole of the work required. Before starting work, they were asked to anticipate all the steps or activities they thought they would follow - the sequence of their design activity - and to make estimates of the time involved for each. A lecture period prior to this exercise was used to talk about how this could be done. It was agreed that initial estimates could be inaccurate. What was important was for students to monitor their actual progress and to note whether they had overlooked any activities initially. The object was to let students see the importance of programming their time in relation to the task required and the time available. Previous project work would help them to make their estimates on the basis of some experience.

A curious thing emerged from this! From the evaluation of the course (see p.25) undertaken prior to this exercise, it appeared that students had a reasonable understanding of what we were trying to do. Yet, in the timetables submitted (i.e. the estimates) at the beginning of the exercise, the list of activities in the anticipated sequence of actions did not suggest such a measure of understanding. Discussion of this with students, however, revealed that the terminology they used and 'lumping together' of activities was masking a better understanding than one would deduce from the list of activities on the timetable submitted. Nevertheless, this suggests caution in assessment of the success of the overall programme.

Observations on the course

This first year course was demanding even though an attempt was made to show that what we were encouraging students to do is an extension of a natural and familiar way of doing things. In Architecture others are affected by the designer's actions. It is inexcusable not to proceed in a way which allows us to have as clear an idea as possible of what the consequences of these actions may be for others. Design as information processing was presented as a means to help the designer do this.

Much emphasis was given to consideration of users, especially in arriving at a description of what would be a desirable future state. This emphasis did not lead to the exclusion of other matters, but it encouraged students to think beyond only physical things. This led to some difficulties which were particularly noticeable in dealing with the idea of organising information with users as a focus. During the course, some graphical methods (e.g. matrices, link diagrams, flow diagrams) were suggested as possible means to help describe the desired future state to be achieved. Inevitably, such graphical means came to express desirable 'relationships' between activities or physical facilities suggested by the particular subject of the project. The real difficulty for students was to be quite explicit about the exact nature of the 'relationship' they thought they were investigating. Many imprecise or inappropriate notions of this were evident, but the students cannot be blamed for this entirely - the manner in which this part of the work was introduced could easily have contributed. Perhaps we hurried and compressed things unduly and assumed too much and perhaps our expectations were too high. For one thing, students had very little access to relevant information about users. Much came to depend on their sensitivity and their willingness, as well as ability, to project themselves into user roles - to imagine themselves using the physical things they proposed, and to be very perceptive and then very critical of what the consequences of their proposals would be from the user's perspective.

This emphasis could be thought to be too demanding. On the other hand,

it was made with some understanding of the limited (but nevertheless valuable) experience of first year students. We stressed that we were very much interested in *attitudes* towards users, and the *willingness* to try to see things through the eyes of others. We acknowledged that experience and access to information about users was limited, but believed that this should not have prevented willingness to accept the designer has a responsibility towards users. The kind of things we were hoping students would appreciate (about how people may respond in the environments they were proposing) were not out of the realm of their experience - we were not pushing high level environmental psychology issues or user studies. Rather, we were looking for appreciation of very simple responses within the context of the projects. We were not so much disappointed if the student failed to *know* things about human response, but we were disappointed if the student was unwilling to consider that certain responses were possible. Instances of rather cavalier dismissals of possible user response when referred to were disturbing, especially as possible responses were described in terms that could not altogether be outside existing experience. (It should also be noted that some time had been spent in the Architectural Design and Planning lectures on these very matters and in this subject a study was completed that was aimed to extend students' experience of how people use and respond to physical environments.)

In the review and tutorial sessions, much time was spent in trying to demonstrate to students that the consequences of their design actions had not always been tested rigorously. We did this by showing where their proposals fell short of their own stated ideas of the desired future state; by discussing the completeness of the information students were using; by reference to the way information had been organised for use, particularly to any ways in which this was inadequate or unclear. We showed our main interest to be in how the students had thought about what they had been asked to do. In spite of this, there were many times when students tended to justify what they had done rather than to see that they had not thought about consequences sufficiently, or to admit that a particular consequence was worth considering. To make our points proved to be very hard in some instances. For Exercise E1 (Accommodation for fruit-

pickers) we attempted to show more forcibly that certain proposals had less than desirable consequences for users. A professional mime demonstrated quite dramatically some of the shortcomings, from the point of view of users. Although these shortcomings were evident in the submissions, recognition of them had been resisted in the review and tutorial sessions. The mime proved to be a most useful and telling experience.

So far, students have had few opportunities to apply this approach to architectural design. We believe we have gone some way in establishing a realistic understanding of what architectural design involves, a good base from which further aspects of the total activity can proceed and a sounder one than had been previously achieved. What is to follow in future years can be related to this base. We have investigated one way of approaching design, a way that accommodates any individual aesthetic, any individual beliefs about what the prime concerns of architecture may be. We have attempted to head students in a direction that recognises user response as a particular concern of architectural design. We have stressed the importance of relevant information for design, the kinds of information, the sources of information, and the use of information.

We have not been concerned with how design ideas can be generated. We have not been very much concerned with how ideas are expressed in physical terms (the end-product of design). These are matters which later years in the studio should now take over.

Evaluation of the programme of work

At the beginning of the year, before any work was done in the studio, the overall concept of the programme of work was discussed with Mr. Robert Cannon of this University's Advisory Centre for University Education. We arranged for the Centre to monitor as much of the programme as possible so that some evaluation of its outcomes could be made. The results were encouraging. We have some reason to believe that the purpose of the programme as described was substantially perceived by students, and seen to have relevance to their architectural studies. There were criticisms of

some of the things we did, and useful comments received that would cause us to reconsider some of our actions in any future programme. Nothing from this evaluation suggests that the approach we adopted was in itself questionable, but some of the ways in which we presented it could be improved. The assessment procedure is apparently not as satisfactory as it could be and students still see it as something beyond their involvement.

We certainly do not want to appear to be too carried away with the results of this evaluation. We are well aware that other problems have appeared that the evaluation did not reveal - these have been referred to already. Nevertheless, we are encouraged to refine this programme of design work, for we believe it to be a worthwhile introduction to the complex matter of architectural design.

One encouraging note is that, from student comments, we did apparently manage to show that we were concerned, in the projects, with process and that the product was simply a means to explore process.

Assessment of students

In retrospect, we realise that our formal assessment procedure will contained faults which detracted somewhat from the educational value of the programme. The marking system adopted (on a point score basis) was, for our purposes, more useful to students than the grading system adopted in the School generally because it did help students to judge the staff view of their progress more easily. But the allocation of points, as much as a grade, was still regarded as a debatable issue. Even though we tried to dissociate 'marking' from the review sessions, the importance students attached to marks was still lurking. It seems desirable to respond to this, and to think about how we might involve students in formal assessment, if for no other reason than to help them appreciate more fully the process adopted.

Implications for professional education

Professional courses are liable to become more concerned with the outcomes of thought than with the thought processes leading to those outcomes. This is certainly true of Architecture. It is left to those familiar with other disciplines to judge how far this is applicable to their own teaching. It is indeed unfortunate if a professional course in a university does no more than provide the facts out of which products emerge without the student really understanding how it happened - or how it could happen. Professional irresponsibility is the inevitable progeny of such ignorance.

Architecture is not without its critics mainly because it is not always seen to act in the best interests of those for whom it provides. Criticism ranges from adverse comment on simple irritating details to vehement blasts over issues which affect people's well-being at highly significant levels. It is surely the task of professional education to take steps to ensure that opportunities for such criticism are reduced if not totally removed. The course described here is an attempt to make a start towards helping students to become aware of their responsibility to others and to equip them with the means to meet this responsibility. Concern for the profession has not been the motivation, but rather concern for the people who are on the receiving end of what architects do.

Besides this primary goal of the course - which to some may appear idealistic or even pretentious - there has been the underlying desire to base a course on valid educational principles, and these are embodied in the two premises set out at the beginning of this paper. Teachers in other professional courses - and, for that matter, in non-professional courses too - may consider their approach and see whether these premises hold any clues for them.

The separation of process from product, suggested by the first premise, is the essence of the project mode of teaching. Reference to the monograph *Project methods in higher education (Monograph 24)* (produced by the Working Party on Teaching Methods for the Society for Research into Higher Education

London, 1975), is recommended for a valuable discussion of the nature of projects and their use as a teaching method.

It is natural for us, when learning new things in life, to relate the new to what already exists. It is only sensible to respect this natural learning tendency. The second premise on which this course is based is an expression of this principle, which is applicable to any learning experience. Other teachers are invited to judge whether what they do applies this principle. For a first year course it is often argued that, at the most, only very little exists upon which to build. This is particularly so in courses where the school experience does little to prepare students either in subject matter or way of thinking required in a university setting. Professional courses usually fall into this category. But this argument overlooks the fact that students bring with them more than just academic experience. They have already acquired a way of perceiving and coping with things in their everyday life. To neglect this means that new knowledge is being presented in a way that students are unable to relate it to any past experience. As a result, unnecessary complications are introduced into a first year course. We have tried, in a small way perhaps, to reduce these complications.

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What success has been achieved would not have been possible without the enthusiastic and sympathetic support of Greg Bamford and Ian Macdonald in devising and running this programme. Their contributions are very much appreciated. Robert Cannon must also be thanked for his interest and advice.

Notes

1. A first-hand experience confirms the prevalence of this attitude of teachers in architecture towards the desirability of separating process from product. This was clearly evident at a seminar organised by the York Institute of Advanced Architectural Studies held in

January, 1977 on project work in architectural education. The seminar was attended by staff from many schools in Britain reflecting many different approaches to architectural education. Misconceptions about the nature of project work were revealed, and unfortunately, very little willingness was shown to accept that prevailing notions of project work in architecture schools are often wrongly based. A subsequent seminar, on the same topic, held in February 1978 apparently was more productive in this regard.

2. Two unpublished papers written during study leave argue cases for these two premises:
Claridge, Brian, *Design projects in architecture courses,* February, 1977. (This paper was used at the York seminar in February, 1978. See Note 1.)

Architecture I - An approach to first year studies in architecture, February, 1977. (Copies are available from the Department of Architecture, University of Adelaide.)

3. Ten groups of students worked on different tasks, each of which involved the design and production of a working prototype. The subjects of the tasks were given as:
   (i) *an apparatus to exercise some specific (chosen) part of the body* using four (or more) old motor tyres only;
   (ii) *a single play object for children,* using four or more old motor tyres only;
   (iii) a kit which can be assembled into a *table* for use by four people, using only the material from used cardboard packing boxes;
   (iv) a kit which can be assembled into a *chair* for an adult, using only the material from used cardboard boxes;
   (v) a kit which can be assembled into a *bookcase* to hold 100 books, using only the material from used cardboard packing boxes;
   (vi) an educational game for blind children intended to develop *tactile ability*;

(vii) an educational game for blind children intended to develop *the ability to orientate oneself*;

(viii) *a child-resistant cupboard* for storing household cleaners, medicines, etc. (not dependent on the usual lock and key;

(ix) within a 900mm timber framed open cube, cause two marbles to move *downwards* within a prescribed time and in a manner to become a 'source of wonder and delight';

(x) within a 900mm timber framed open cube, cause two marbles to move *upwards* within a prescribed time and in a manner to become a 'source of wonder and delight'.

4. For example, we were able to identify and demonstrate the cyclic nature of design activity, and how any difficulty in proceeding encountered required reconsidering the action taken, or reconsidering the desired outcome, or how further information is sometimes required in order to proceed. All these points were evident, in some way or another, in the diary accounts and were particularly relevant to our needs. We were also able to identify the processes of divergence, transformation, and convergence that are held to be characteristics of design activity.

5. Groups whose task it was to make items of furniture (chair, table, bookcase) from used cardboard packing boxes had their products commented upon by a representative from the Industrial Design Institute of Australia; the groups which made an exercising machine from old motor tyres had its product commented upon by the University's Department of Physical Education; the group which designed a child-resistant cupboard referred its result to the National Safety Council (and received enthusiastic commendation of its work); groups which produced games for blind children referred their products to a school for blind children; a play object for children made from old tyres was taken to a kindergarten and its use by children observed.

6. This judgment was revealed in the analysis of the information collected in the evaluation of Studio 1.

7. The opinion was often expressed that lack of drawing ability prevented students from expressing their ideas adequately, and some frustration was evident. But the kind of things we were attempting to help students become aware of did not entirely depend on drawing ability to reveal them. It was difficult to convince students that what we were trying to bring them to understand could be investigated without entirely relying on drawing skills - or model making skills. There is such a strong connection in student minds between drawing and architecture, and such a strong conviction that architecture is product-oriented, that it was hard to assure students that drawing ability was not so important for our particular purposes.